WE CLAIM

1. A micro-electromechanical device that comprises

a substrate that incorporates drive circuitry;

an elongate actuator that has a fixed end that is connected to the substrate so that the actuator can receive an electrical signal from the drive circuitry and a movable end, the actuator being configured so that the movable end is displaced relative to the substrate on receipt of the electrical signal;

a motion-transmitting structure that is fast with the movable end of the actuator, the motion transmitting structure being connected to a working member so that movement of the actuator is translated to the working member; and

a covering formation that is positioned on the substrate so that the substrate, the covering formation and the motion-transmitting structure define an air chamber, the actuator being positioned within the air chamber.

2. A device as claimed in claim 1, in which the covering formation includes walls that extend from the substrate and a cover that spans the walls, the motion-transmitting structure being shaped so that the cover and the motion-transmitting structure define generally co-planar surfaces that are spaced from, and generally parallel to the substrate, an opening being defined between the cover and the motion-transmitting surface to facilitate relative displacement of the cover and the motion-transmitting surface.

3. A device as claimed in claim 2, in which the actuator includes at least one elongate actuator arm of a conductive material that is capable of thermal expansion to perform work, the actuator arm having an active portion that defines a heating circuit that is connected to the drive circuitry layer to be resistively heated on receipt of the electrical signal from the drive circuitry layer and subsequently cooled on termination of the signal, and a passive portion which is insulated from the drive circuitry layer, the active and passive portions being positioned with respect to each other so that the arm experiences differential thermal expansion and contraction reciprocally to displace the movable member.

4. A device as claimed in claim 3, in which the motion-transmitting structure defines a lever mechanism and has a fulcrum formation that is fast with the substrate and pivotal with

respect to the substrate and a lever arm formation mounted on the fulcrum formation, an effort formation being connected between the movable end of the actuator and the lever arm formation and a load formation being connected between the lever arm formation and the working member.

5. A device as claimed in claim 4, in which the lever arm formation, the cover and the walls define a unitary structure with the lever arm formation being connected to the walls with a pair of opposed torsion formations that are configured to twist as the lever formation is displaced.

6. A device as claimed in claim 4, which includes nozzle chamber walls that are positioned on the substrate and a roof wall, the walls and the motion-transmitting structure defining a nozzle chamber and the roof wall defining an ejection port in fluid communication with the nozzle chamber, the working member being in the form of a fluid ejection device that is positioned in the nozzle chamber, such that displacement of the working member results in ejection of fluid in the nozzle chamber from the ejection port, the substrate defining a fluid inlet channel in fluid communication with the nozzle chamber to supply the nozzle chamber with fluid.

7. A device as claimed in claim 6, in which the roof wall, the lever arm formation and the cover are generally co-planar, with a slotted opening being defined between the roof wall and the lever arm formation to accommodate relative movement of the lever arm formation and the roof wall.